

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : **02-248671**

(43)Date of publication of application : **04.10.1990**

(51)Int.Cl.

F04B 43/04  
F04B 9/00

(21)Application number : 01-069864

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(22)Date of filing : **20.03.1989**

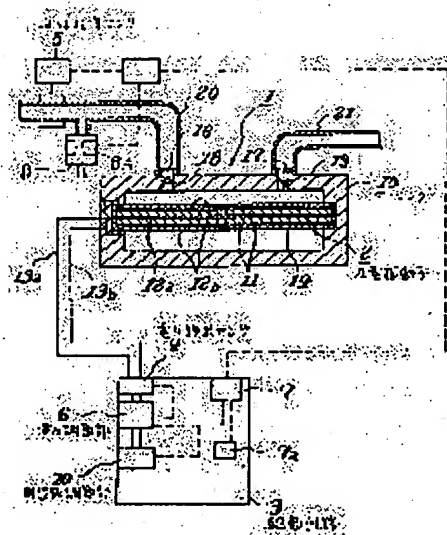
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**(54) QUANTITATIVE FORCE FEED METHOD OF FLUID**

(57)Abstract:

**PURPOSE:** To conduct highly efficient and highly precise force feed by detecting the input electric power of the piezoelectric vibrator of a piezoelectric pump and the viscosity of a liquid by respective sensors, and automatically controlling at least two of voltage regulation, frequency regulation, and regulation of diluted solution of the liquid.

**CONSTITUTION:** A piezoelectric element 2 having a piezoelectric film 11 and a film electrode 12a is fixed to a casing 15, and an intake port 16 and a discharge port 17 are provided to form a piezoelectric pump 1. The piezoelectric pump is driven by a driving circuit 3, and the outputs detected by a power detecting sensor 4 and a viscosity sensor 5 are inputted to a voltage regulating part 6 and a viscosity setting equipment 7a. These are compared with set values preliminarily set according to the flow rate, whereby the voltage is regulated and the diluted solution regulator of a diluted solution feed part 8 is operated. At least two of voltage, frequency, and diluted solution regulations are automatically controlled, and quantitative force feed of liquid can be conducted at high efficiency and high accuracy.



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[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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